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Jc688 U.S. PTO

**UTILITY PATENT APPLICATION TRANSMITTAL**  
**(Small Entity)***(Only for new nonprovisional applications under 37 CFR 1.53(b))*Docket No.  
202.000080Total Pages in this Submission  
3**TO THE ASSISTANT COMMISSIONER FOR PATENTS****Box Patent Application**  
**Washington, D.C. 20231**

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

**BREATHABLE NEOPRENE SUBSTITUTE**

and invented by:

**Thomas Blaszczykiewicz**Jc675 U.S. PTO  
09/503429

02/14/00

If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Enclosed are:

**Application Elements**

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 7 pages and including the following:
  - a. ☒ Descriptive Title of the Invention
  - b. ☒ Cross References to Related Applications *(if applicable)*
  - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
  - d. ☐ Reference to Microfiche Appendix *(if applicable)*
  - e. ☒ Background of the Invention
  - f. ☒ Brief Summary of the Invention
  - g. ☒ Brief Description of the Drawings *(if drawings filed)*
  - h. ☒ Detailed Description
  - i. ☒ Claim(s) as Classified Below
  - j. ☒ Abstract of the Disclosure

**UTILITY PATENT APPLICATION TRANSMITTAL**  
**(Small Entity)**

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

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3

**Application Elements (Continued)**

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*  
a. ☒ Formal      b. ☐ Informal      Number of Sheets one
4. ☒ Oath or Declaration  
a. ☒ Newly executed *(original or copy)*      ☐ Unexecuted  
b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*  
c. ☒ With Power of Attorney      ☐ Without Power of Attorney  
d. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s) named in the prior application,  
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Computer Program in Microfiche
7. ☐ Genetic Sequence Submission *(if applicable, all must be included)*  
a. ☐ Paper Copy  
b. ☐ Computer Readable Copy  
c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

**Accompanying Application Parts**

8. ☒ Assignment Papers *(cover sheet & documents)*
9. ☐ 37 CFR 3.73(b) Statement *(when there is an assignee)*
10. ☐ English Translation Document *(if applicable)*
11. ☐ Information Disclosure Statement/PTO-1449      ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing  
☐ First Class      ☒ Express Mail *(Specify Label No.):* EL413774787US

# UTILITY PATENT APPLICATION TRANSMITTAL (Small Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.  
202.000080

Total Pages in this Submission  
3

## Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
16. ☒ Small Entity Statement(s) - Specify Number of Statements Submitted: two
17. ☐ Additional Enclosures (please identify below):

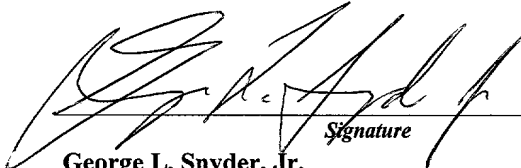
## Fee Calculation and Transmittal

### CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	14	- 20 =	0	x \$9.00	\$0.00
Indep. Claims	3	- 3 =	0	x \$39.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$345.00
OTHER FEE (specify purpose) <u>Assignment</u>					\$40.00
TOTAL FILING FEE					\$385.00

- ☒ A check in the amount of **\$385.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **50-0822** as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of \_\_\_\_\_ as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: February 14, 2000

  
Signature

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Express Mail Label No. EL413774787US

Ref. No. 202.000080

Applicant or Patentee: **Thomas BLASZCZYKIEWICZ**

Serial No.:

Filed:

Patent No.:

Issued:

For: **BREATHABLE NEOPRENE SUBSTITUTE**

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
(37 CFR 1.9(f) AND 1.27 (b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Sections 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled:

**BREATHABLE NEOPRENE SUBSTITUTE**

described in:

- ☒ The specification filed herewith
- ☐ Application Serial No.:      Filed:
- ☐ Patent No.:      Issued:

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ No such person, concern, or organization
- ☒ Persons, concerns or organization listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27).

Full Name: ACCU-MED TECHNOLOGIES, INC.

Address: 90 Chenango Street, Buffalo, NY 14213

☐ Individual ☒ Small Business Concern ☐ Nonprofit

Full Name:

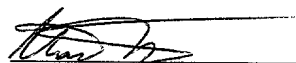
Address:

☐ Individual ☐ Small Business Concern ☐ Nonprofit

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Thomas BLASZCZYKIEWICZ

  
Signature

2/14/2000  
Date

Express Mail Label No. EL 413774 787 US

Ref. No. 202.000080

Applicant or Patentee: **Thomas BLASZCZYKIEWICZ**

Serial No.:

Filed:

Patent No.:

Issued:

For: **BREATHABLE NEOPRENE SUBSTITUTE**

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
(37 CFR 1.9(f) AND 1.27 (c)) – SMALL BUSINESS CONCERN

I hereby declare that I am:

- ☐ the owner of the small business concern identified below:
- ☒ an official of the small business concern identified below empowered to act on behalf thereof:

NAME OF CONCERN: **ACCU-MED TECHNOLOGIES, INC.**

ADDRESS OF CONCERN: **90 Chenango Street, Buffalo, NY 14213**

I hereby declare that the above-identified small-business concern qualifies as a small business concern as defined in 13 CFR 121.3-18 for purposes of paying reduced fees under Sections 41 (a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention **BREATHABLE NEOPRENE SUBSTITUTE** described in:

- ☒ The specification filed herewith
- ☐ Application Serial No.:      Filed:
- ☐ Patent No.:              Issued:

If the rights held by the above-identified small business concern are not exclusive, each person, concern or organization having rights to the invention is listed below, and no rights are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern, or organization
- ☐ Persons, concerns or organization listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27).

Full Name:

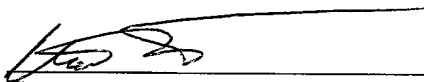
Address:

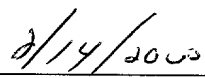
☐ Individual ☐ Small Business Concern ☐ Nonprofit

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

**Thomas BLASZCZYKIEWICZ**  
**President**  
**Accu-Med Technologies, Inc.**

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

**BREATHABLE NEOPRENE SUBSTITUTE**5                    CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims benefit under 35 U.S.C. § 119(e) of U.S. Provisional Patent Application Serial No. 60/120,164 filed February 16, 1999.

BACKGROUND OF THE INVENTION10    *A. Field of the Invention*

The present invention relates generally to the field of resiliently stretchable cushioning materials for a wide variety of applications, and more particularly to a novel substitute for layered neoprene-based materials and a process for manufacturing same.

15    *B. Description of the Prior Art*

Materials having at least one layer of stretchable fabric bonded to a layer of neoprene synthetic rubber are well-known, and are currently used in a wide variety of products, including medical devices such as knee and elbow braces and head gear apparatus for treatment of sleep apnea. Two common complaints are heard with respect to such materials of the prior art. First, neoprene does not permit the skin covered by the material to breathe. As a result, products made with neoprene are uncomfortable to wear for extended periods of time. Second, adhesive is used to bond the fabric layer to the neoprene layer, which causes skin irritation in some individuals.

U.S. Patent No. 5,139,476 discloses a knee wrap formed of a resiliently flexible laminate comprising an outer elasticized fabric layer, an open-cell polymeric foam core, and an inner elasticized fabric layer. This patent does not disclose compressing the foam layer prior to fixing the fabric layers thereto, or using flame lamination for bonding.

U.S. Patent No. 4,782,605 describes a shoe insert tri-laminate having a foam layer which is flame laminated to a fabric layer, and a base layer of foam which is subsequently flame laminated to the foam layer.



## SUMMARY OF THE INVENTION

It is an object of the present invention to provide a breathable substitute material for neoprene-based materials.

5 It is another object of the present invention to provide a laminate material which does not use adhesive for bonding.

It is a further object of the present invention to provide a material which mimics the behavior of neoprene by being stretchable in all directions.

In accordance with the stated objects, a tri-laminate material is disclosed which  
10 provides a breathable, non-irritating substitute for neoprene-based materials. The material of the present invention comprises a layer of resiliently stretchable open-celled foam which has been compressed 4 to 1; an outer layer of resiliently stretchable loop fabric, and an inner layer of resiliently stretchable wicking fabric. The fabric layers are fixed to opposite surfaces of the foam layer by flame lamination, either in two passes or  
15 in one pass.

## BRIEF DESCRIPTION OF THE DRAWING

The nature and mode of operation of the present invention will now be more fully described in the following detailed description of the preferred embodiment taken with  
20 the accompanying drawing figure, in which:

Fig. 1 is a cross-sectional view a material formed in accordance with a preferred embodiment of the present invention.

## DETAILED DESCRIPTION

### OF THE PREFERRED EMBODIMENTS

Referring initially to Fig. 1, a layered material formed in accordance with a first embodiment of the present invention is shown and identified generally by the reference numeral 10. Material 10 comprises a central foam layer 12, an inner fabric layer 14 fixed to an inner surface 12a of foam layer 12, and an outer fabric layer 16 fixed to an outer  
30 surface 12b of foam layer 12. Material 10 is intended for use in a wide variety of consumer products, many of which involve surface-to-surface contact between material

10 and skin of a user. Protective garments, medical braces, and medical head gear are examples of products which may incorporate material 10. Consequently, material 10 is designed to be breathable, have “four-way” stretchability, and be non-irritating to individuals having sensitive skin.

5           Foam layer 12 comprises an open cell foam to allow air flow therethrough. A suitable foam is polyurethane sold under the registered trademark FOAMEX®, identification number A200-50D, and having the following specified properties:

	Density	1.95-2.07 lbs/ft <sup>3</sup>	(ASTM D 3574-86 Test A)
10	Tensile Strength	18.0 psi minimum	(ASTM D 3574-86 Test E)
	Elongation	220% minimum	(ASTM D 3574-86 Test E)
	Tear Strength	2.5 lb/in minimum	(ASTM D 3574-86 Test F)
	Load Deflection @ 25%	50 ± 5 lbs	(ASTM D 3574-86 Test B <sub>1</sub> )
	Compression Set @ 50%	10.0% maximum	(ASTM D 3574-86 Test D)
15	Flammability	SE. 4 /minute max.	(FMVSS 302).

          In accordance with a preferred embodiment of the present invention, foam layer 12 is compressed at a four-to-one ratio, such that its final thickness, preferably about .155 inches, is one-quarter its original thickness. The compressed foam has a higher density which allows it to mimic the four-way stretch behavior and density characteristics of neoprene synthetic rubber. A desired density of approximately 8 lbs/ft<sup>3</sup> is achieved after compression. Since foam layer 12 is of an open-celled construction, it is permeable by air and thus breathable, a feature lacking in neoprene of the prior art.

          Inner fabric layer 14 comprises a porous, four-way stretchable fabric which is designed to wick moisture away from the skin surface. A currently preferred fabric contains 83% semi-dull COOLMAX® polyester and 17% lycra. Consequently, material 10 is hydrophilic to keep skin dry and prevent irritation.

          Likewise, outer fabric layer 16 comprises a porous, four-way stretchable fabric. Outer fabric layer 16 is preferably a “loop” fabric for receiving VELCRO hooks. A currently preferred fabric contains 8.99% bright nylon, 10.85% semi-dull nylon, and 80.16% bright lycra.

The process of manufacturing material 10 will now be described. Outer fabric layer 16 is fixed to outer surface 12b of compressed foam layer 12 by flame lamination. During flame lamination, foam surface 12b is first heated and then brought into contact with outer fabric layer 16 under predetermined pressure conditions to achieve bonding  
5 between the two layers. A flame lamination machine having roller spacing (nip) settings at .7 mm platform and .7 mm floor, and a slow speed setting of 8 meters per minute, is used to flame laminate outer fabric layer 16 to foam layer 12. A curing time of about one hour is satisfactory. Inner fabric layer 14 is then fixed to inner surface 12a of compressed  
10 foam layer 12 by flame lamination using the same machine settings. A similar curing time of about one hour is allowed.

While the process described above necessitates two passes of foam layer 12 through a flame lamination machine, it is contemplated to flame laminate both the inner and outer fabric layers 14 and 16 to foam layer 12 in one pass. Since each pass of foam  
15 layer 12 through the flame lamination machine reduces its four-way stretch characteristics somewhat, a single pass method of manufacture would be preferable. However, the serpentine path foam layer 12 must travel for one-pass flame lamination may possibly result in uneven bonding and pockets between the foam and fabric layers.

Applications for material 10 include insoles for footwear, athletic equipment, and medical devices.

20

What is claimed is:

1. A breathable, stretchable, hydrophilic material comprising:  
a porous inner layer of stretchable fabric;  
5 a porous outer layer of stretchable fabric;  
a central layer of open cell foam fixed between said inner and outer layers to stretch with said inner and outer layers.
2. The material according to claim 1, wherein said inner layer includes a blend of  
10 polyester and lycra.
3. The material according to claim 2, wherein said blend is 83% polyester and 17% lycra.
- 15 4. The material according to claim 1, wherein said outer layer includes a blend of nylon and lycra.
5. The material according to claim 4, wherein said blend includes 8.99% bright nylon, 10.85% semi-dull nylon, and 8.16% bright lycra.  
20
6. The material according to claim 1, wherein said outer layer includes a plurality of loops for hook-and-loop fastening.
7. The material according to claim 1, wherein said central layer of open cell foam is  
25 compressed.
8. The material according to claim 7, wherein said central layer of open cell foam is compressed at a four-to-one ratio of original thickness to compressed thickness.
- 30 9. The material according to claim 1, wherein said central layer of open cell foam is polyurethane foam.

10. The material according to claim 1, wherein said central layer is flame laminated to said inner layer.

11. The material according to claim 1, wherein said central layer is flame laminated to  
5 said outer layer.

12. The material according to claim 1, wherein said central layer is flame laminated to said outer layer and said inner layer.

10 13. A method of manufacturing a breathable, stretchable, hydrophilic material comprising the steps of:

(A) flame laminating an outer layer of porous stretchable fabric to a central layer of compressed open cell foam to form a two-layer composite material;

(B) curing said two-layer composite material for a period of time; and

15 (C) flame laminating an inner layer of porous stretchable fabric to a central layer of compressed open cell foam to form a three-layer composite material; and

(D) curing said three-layer composite material for a period of time.

14. A method of manufacturing a breathable, stretchable, hydrophilic material  
20 comprising the steps of:

(A) flame laminating an outer layer of porous stretchable fabric to one side of a central layer of compressed open cell foam and simultaneously flame laminating an inner layer of porous stretchable fabric to an opposite side of said central layer to form a three-layer composite material; and

25 (B) curing said three-layer composite material for a period of time.

## ABSTRACT

A tri-laminate material is disclosed which provides a breathable, non-irritating, four-way stretchable substitute for neoprene-based materials. The material of the present invention comprises a layer of resiliently stretchable open-celled foam which has been  
5 compressed 4 to 1; an outer layer of resiliently stretchable loop fabric, and an inner layer of resiliently stretchable wicking fabric. The fabric layers are fixed to opposite surfaces of the foam layer by flame lamination, either in two passes or in one pass.

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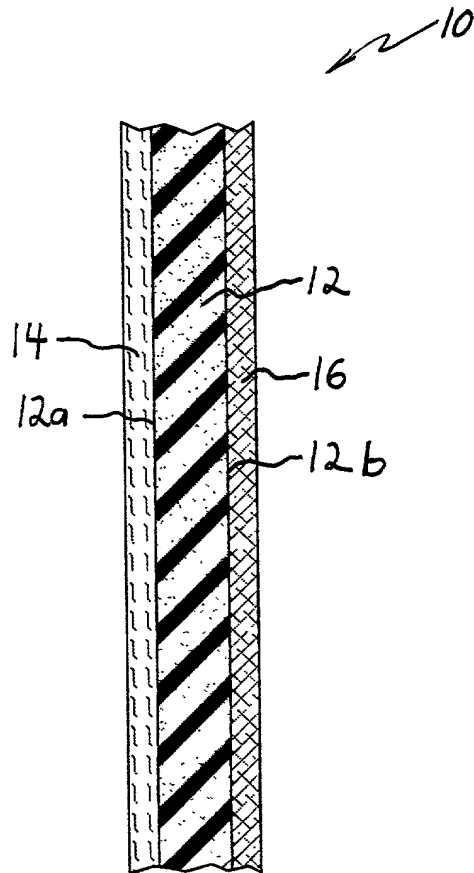


Fig. 1

## Declaration and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

### **BREATHABLE NEOPRENE SUBSTITUTE**

the specification of which is attached hereto unless the following box is checked:

☐ was filed on \_\_\_\_\_ as United States Application Number or PCT International Application Number  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, ☐ § 1.56.

I hereby claim foreign priority under Title 35, United States Code, ☐ § 119(a)-(d) or ☐ § 365(b) of any foreign application(s) for patent or inventor's certificate, or ☐ § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Applications

Priority Not Claimed

[SERIAL NO]      Country      DD/MMMM/YYYY

☐

[SERIAL NO]      Country      DD/MMMM/YYYY

☐

App. No.      Country      Day/Month/Year



I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

**Serial No. 60/120,164 filed February 16, 1999**

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

Status: Patented/Pending/Abandoned

Status: Patented/Pending/Abandoned

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: *(list name and registration number)*

<b>George L. Snyder, Jr.</b>	<b>Reg. No. 37,729</b>
<b>Robert P. Simpson</b>	<b>Reg. No. 33,034</b>
<b>R. Craig Kauffman</b>	<b>Reg. No. 20,362</b>

Send Correspondence to:

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**Williamsville, New York 14221**

Direct Telephone Calls to:

**George L. Snyder, Jr. (716) 626-1564**

Direct Fax Transmissions to:

**George L. Snyder, Jr. (716) 626-0366**

Full Name of sole or first inventor

Inventor's signature:

Date:

**Thomas BLASZCZYKIEWICZ**



2/14/2003

Residence:

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Hamburg, New York 14075**

Citizenship:

**United States**

Post Office Address:

**Same as above**